

1 18. The storage medium of claim 16, wherein the motion estimation function generates a
2 motion vector from a sum of absolute differences in activity within the select anchor frame to
3 encode the B-frame.

1

1 19. The storage medium of claim 16, wherein the motion estimation function selects the
2 temporally closest anchor frame to the B-frame as the select anchor frame.

REMARKS

Upon entry of this response, Applicant respectfully requests reconsideration of the above referenced application in light of the following remarks. Claims 1-19, as presented above, remain pending.

Claim Rejections – 35 U.S.C. § 102

Claims 1-19 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,801,778 issued to Ju (*Ju*). Well-settled patent law requires that in order to anticipate a claim, a single reference must teach each and every element of the rejected claim, and that such elements are presented as in the rejected claim. As detailed below, the *Ju* reference fails to meet this burden vis-à-vis the claimed invention of rejected claims 1-19. Thus, Applicant respectfully traverses the rejection of such claims.

As provided in a previous response, Applicant respectfully submits that the *Ju* reference merely provides a brief description of a conventional MPEG-2 video compression scheme. That is, *Ju* discloses the conventional practice of computationally intensive,

macroblock-based motion estimation. In *Ju*, B-frame motion estimation encoding is performed on a macroblock by macroblock basis using information generated from preceding and superseding frames (see, e.g., col. 2, lines 18-50; and col. 3, lines 15-19).

In contradistinction to the teachings of the *Ju* reference, claims 1-19 are generally directed to a method of *frame-based* motion estimation. In this regard, rejected claim 1, for example, includes the feature of:

*unidirectionally predicting content of each B-frame
from a temporally closest anchor frame.* (emphasis added)

That is, encoding of a B-frame (i.e., the entire frame) is unidirectionally predicted from merely the temporally closest anchor frame. In this regard, Applicant respectfully asserts that the claimed invention of, e.g., rejected claim 1 differs from the *Ju* reference in at least two regards.

First, B-frame encoding in the *Ju* reference is performed at the macroblock level. That is, a decision as to the predictive source for encoding a B-frame in accordance with the *Ju* reference (or any conventional MPEG encoder for that matter) is made on a macroblock-by-macroblock basis for each macroblock of the B-frame. Those skilled in the art will appreciate that this is a computationally intensive process that must be performed multiple times during the encoding process of each B-frame.

In contrast to the computationally intensive process of the conventional MPEG encoding, the claimed invention of rejected claim 1 makes the decision as to the predictive source for the B-frame once per frame, i.e., the *same* predictive source is utilized in encoding the entire B-frame.

Second, the *Ju* reference teaches that individual macroblocks within the B-frame may be “(a) intracoded, (b) unidirectional forward predictive coded , (c) unidirectional backward predictive coded using temporal encoding relative to a subsequent reference frame, or (d) bidirectional predictive coded using temporal encoding relative to previous and subsequent reference frames” (see, e.g., col. 2, lines 31-35). Thus, in *Ju*, a single B-frame may have macroblocks which are encoded using content from a number of different predictive sources without regard to which frame is the temporally closest frame.

In contrast, the claimed invention of rejected claim 1 provides that a B-frame is encoded based merely on the temporally closest anchor frame. Accordingly, the claimed invention removes the macroblock-by-macroblock decision-making that is inherent in the conventional MPEG encoding process as typified by *Ju*. Moreover, the selection of the anchor frame to use in such unidirectional encoding is limited to only the selection of the temporally closest anchor frame.

Accordingly, Applicant respectfully submits that the *Ju* reference fails to teach a method including the limitations of, for example, rejected claim 1. Applicant respectfully submits that an artisan reading the *Ju* reference would simply gain a general, non-enabling familiarity with a conventional MPEG-2 macroblock-based motion estimation process. In this regard, the *Ju* reference fails to teach each and every element of the rejected claim(s) as presented in the claim. Indeed, Applicant respectfully asserts that the macroblock-based, bidirectional motion estimation process described in the *Ju* reference actually **teaches away from** the unidirectional, frame-based motion estimation process of, for example, rejected claim 1.

As provided above, well-settled patent law requires that in order to *anticipate* a claim, a single reference must teach each and every element as presented in the rejected claim. In this case, Applicant respectfully asserts that not only does the *Ju* reference fail to anticipate the invention claimed with particularity in, e.g., rejected claim 1, but fails to disclose or suggest the required features of unidirectionally predicting content of each B-frame from a temporally closest anchor frame.

Thus, in light of the foregoing, Applicant respectfully asserts that the *Ju* reference fails to anticipate or render obvious that which is claimed in rejected claim 1. Accordingly, Applicant respectfully requests that the § 102(e) rejection of claim 1 be withdrawn.

Applicant submits that rejected claims 8 and 16 enjoy features analogous to those introduced above, with respect to claim 1. Accordingly, Applicant respectfully asserts that rejected claims 8 and 16 are likewise patentable over the *Ju* reference for arguments analogous to those used to distinguish claim 1 from the *Ju* reference. Thus, Applicant respectfully request that the §102(e) rejection of claims 8 and 16 be withdrawn.

Applicant notes that claims 2-7, 9-15 and 17-19 are dependent upon patentable base claims 1, 8 or 16, respectively. Accordingly, in addition to any independent basis for patentability, Applicant respectfully submits that claims 2-7, 9-15 and 17-19 are likewise patentable over the *Ju* reference by virtue of at least such dependencies. Accordingly, Applicant respectfully requests that the § 102(e) rejection of claims 2-7, 9-15 and 17-19 be withdrawn.



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Conclusion

In light of the foregoing, Applicant respectfully asserts that claims 1-19 are in condition for allowance, and earnestly awaits notice thereof. **In an effort to expedite prosecution of this matter, the Examiner is invited to call the undersigned counsel for the Applicant to discuss and further issues preventing allowance of the currently pending claims.**

Please charge any shortages and credit any overages to our Deposit Account No. 02-2666.

Respectfully submitted,
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